

## REMARKS

This document is in response to the Advisory Action of January 26, 2007 and Final Office Action of November 8, 2006, wherein the Examiner:

- (i) rejected claims 2-9, 11, and 12 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter, and
- (ii) indicated that claims 13, 14, 16, 17, 19 and 20 are allowed.

Applicants have thoroughly reviewed the Advisory Action and the Final Office Action including the Examiner's remarks and the references cited therein. Applicants wish to extend their thanks to the Examiner for allowing claims 13, 14, 16, 17, 19 and 20. The following remarks are fully responsive to the Final Office Action and are believed to render all claims at issue patentably distinguishable over the cited references.

### Rejections under 35 U.S.C. § 101

Applicants respectfully disagree with the Examiner that the claimed invention is directed to non-statutory subject matter. Applicants wish to direct the Examiner to MPEP 2106 (Rev. 3), and specifically section IV(B)(2)(b) thereof entitled "Statutory Process Claims". As stated in this section, a claimed process is clearly statutory if it involves manipulation of data representing physical objects or activities.

See Id. The claimed process involves manipulation of data (i.e., "ionization voltage") that represents the physical activity of the combustion in a combustion chamber. For this reason, Applicants respectfully submit that the invention as provided for by claims 2-9, 11 and 12 falls within this "safe harbor" and is, therefore, statutory subject matter.

As additional evidence that the claimed invention falls within this "safe harbor" provision, the first example of this type of statutory subject matter described in this section of the MPEP is analogous to the presented claims. This example is reproduced immediately below:

Examples of this type of claimed statutory process include the following:

- A method of using a computer processor to analyze electrical signals and data representative of human cardiac activity by converting the signals to time segments, applying the time segments in

reverse order to a high pass filter means, using the computer processor to determine the amplitude of the high pass filter's output, and using the computer processor to compare the value to a predetermined value. In this example the data is an intangible representation of physical activity, i.e., human cardiac activity. The transformation occurs when heart activity is measured and an electrical signal is produced. This process has real world value in predicting vulnerability to ventricular tachycardia immediately after a heart attack.

See Id. Similar to the example above, the claimed invention analyzes electrical signals and data (i.e., "detecting an ionization voltage"), manipulates the electrical signals and data in various ways (i.e., "integrating said ionization voltage over a spark window"), and then compares the manipulated data to a predetermined value (i.e., "comparing said integrated ionization voltage with a threshold"). In the claimed invention, the data is an intangible representation of a physical phenomenon (i.e., the ignition or lack of ignition in a combustion chamber). The transformation occurs when the ionization voltage is detected and an electrical signal is produced, which is very similar to the example in the MPEP. The claimed process, similar to the example, has real world value in determining whether an open-secondary winding condition exists.

Furthermore, Applicants respectfully submit that the Examiner is incorrect when he says that "[t]he result of detecting an open secondary winding (claims 3, 11) are [sic] not outputted or displayed to a user or stored for later use" (See pg. 2 of the Office Action). Applicants respectfully submit that the limitation in claims 3 and 11 reading "setting an open secondary flag" comprise storing the results of the claimed process. The result of the process is the determination of whether or not an open secondary condition exists in a combustion chamber. The claimed process sets a flag when the open secondary winding condition is detected. This setting of a flag constitutes storing the result of the process and, therefore, the Examiner is incorrect when stating the claims do not produce any tangible results (See pg. 2 of the Office Action). The tangible result is setting the open secondary flag.

Additionally, Applicants respectfully disagree with the Examiner's contention that "in order for the real-world result to be realized, the end result would need to be conveyed to the user" (See Final Office Action, pg. 4). There is no such requirement in the Interim Guidelines, or elsewhere in the law.

Finally, the Federal Circuit has held that claims that are substantially similar in format to those of the present Application constitute patentable subject matter under 35 U.S.C. § 101. One such example is referenced above from section IV(B)(2)(b) of MPEP 2106 (Rev. 3). The patent in this example is U.S. Pat. No. 4,422,459 ("the '459 Patent") and the Federal Circuit's decision was reported in Arrhythmia Research Tech. v. Corazonix Corp., 958 F.2d 1053 (Fed. Cir. 1992). In this case, the Federal Circuit held that the process claims of the '459 Patent comprise statutory subject matter. Claim 1 of this patent (one of the process claims that the Federal Circuit held to constitute statutory subject matter) reads as follows:

**1. A method for analyzing electrocardiograph signals to determine the presence or absence of a predetermined level of high frequency energy in the late QRS signal, comprising the steps of:**

**converting a series of QRS signals to time segments, each segment having a digital value equivalent to the analog value of said signals at said time;**

**applying a portion of said time segments in reverse time order to high pass filter means;**

**determining an arithmetic value of the amplitude of the output of said filter; and**

**comparing said value with said predetermined level.**

The steps of claim 3 of the present Application are substantially similar to those above. The steps of "detecting an ionization voltage" and "integrating said ionization voltage over a spark window" in claim 3 of the present Application are analogous to the "converting a series ...", "applying a portion ..." and "determining an arithmetic value ..." steps of the '459 Patent. Similarly, the "comparing said integrated ionization voltage with a threshold" step of the present Application is analogous with the "comparing said value with said predetermined level" step of the '459 Patent. In fact, claim 3 of the present Application includes at least one additional step that is absent from the '459 Patent. Claim 3 includes the step of "setting an open secondary flag ...", for which no analogous step can be found in the '459 Patent. As stated above, this step meets the Examiner's requirement that the result of the claimed process be "stored for later use".

To summarize, the claimed invention is statutory subject matter because it falls within the manipulation of data representing physical objects or activities "safe harbor" provision described in

MPEP 2106 (Rev. 3). This is illustrated by the fact that the first example of this type of statutory subject matter described in this section of the MPEP is analogous to the claims as presented. Furthermore, the claimed process produces the tangible result of setting an open secondary flag, which constitutes storing the result of the claimed process for future use, and therefore the claims are directed to statutory subject matter. Finally, the Federal Circuit's decision in Arrhythmia Research Tech. v. Corazonix Corp. supports Applicants' position that claim 3 constitutes statutory subject matter. Claim 1 of the patent at issue in this case, which has been held to comprise statutory subject matter by the Federal Circuit, is highly analogous to claim 3 of the present Application. In fact, claim 1 of the Arrhythmia patent does not include the "setting a flag" limitation of claim 3 in the present Application; the limitation that constitutes storing the result of the claimed process for future use, as described above.

Notwithstanding the discussion above, Applicants have amended the rejected claims to clarify that the open secondary flag is stored for later use by the powertrain control module by adding the step "conveying said open secondary flag to a powertrain control module" to claims 3 and 11. It is well known in the art that the powertrain control module assists with the control of the engine by, e.g., controlling engine timing and EGR rate (See, for example, paragraph [0033] of the present Application). The powertrain control module will utilize the "open secondary flag" to further assist in its task of engine operation control. This is well-known in the art and generally described at paragraphs [0044] to [0047] of the present Application. While Applicants maintain that there is no requirement in the MPEP or elsewhere that "in order for the real-world result to be realized, the end result would need to be conveyed to the user" as the Examiner contends, Applicants have decided to clarify the rejected claims to obtain a Notice of Allowance and move this case to issuance.

### **Conclusion**

In light of the above remarks, it is respectfully submitted that Applicants have responded in a fully satisfactory manner to all matters at issue in this Application, and that this Application is now in condition for allowance. In this regard, Applicants have made every effort to comply with the

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requirements set forth in the Final Office Action as well as the statutory requirements. Accordingly, Applicants respectfully request that the Examiner allow the pending claims and pass the Application to issue. If the Examiner believes that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at (248) 433-7570.

The Patent Office is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 04-1061.

Prompt and favorable consideration of this response is respectfully requested.

Respectfully submitted,

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